

# Work Order ID 70646

Friday, June 10, 2011 3:55:53 PM



Page 1

Item ID: D350-748-141TRN

Accept



Setup Start



Revision ID:

Stop



Item Name: Crosstube Turning Detail

Start Date: 6/10/2011 Start Qty: 1.00



Cust Item ID:

Required Date: 6/22/2011 Req'd Qty: 1.00



Customer:

Reference:

Run Start



Approvals: Process Plan: *AL*

Date: *11-06-11*

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D350-748-141	Rev F								

100

0.00



MORI SEIKI CNC LATHE LARGE

Mori Seiki

Memo

Mori Seiki CNC Lathe Large

1-Fill tube with sand & install plugs on both ends as per Folio FA648  
2-Turn first side as per Folio FA648  
3- File transition lines smooth.

110

0.00



QC1- Inspect dimensions to dimension sheet

QC

Memo

Quality Control

120

0.00



MORI SEIKI CNC LATHE LARGE

Mori Seiki

Memo

Mori Seiki CNC Lathe Large

1-Turn second side as per Folio FA648  
2- File transition lines smooth.  
3-Scribe Part & Batch as per Dwg D350-748-141

SCRAP

*mm.l 11/07/06*

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: D350-748-141 TRU PAR #: \_\_\_\_\_Fault Category: Landing Gear  
Cross tubesNCR: Yes NoDQA: YesDate: 11/07/15Resolution: Re trainingDisposition: ScrapQA: N/C ClosedDate: 11-07-15NCR: 70646WORK ORDER NON-CONFORMANCE (NCR) 182.51

DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
11/2/16	100	tube is scrap. Operator uses wrong sequence of operations when turning the tube.	<u>[Signature]</u> 11/2/16	→ Scrap + Destroy tube only turned on & half. Finish / Rough. no Resting	<u>[Signature]</u> 11/07/15	<u>[Signature]</u> 11-7-7	<u>[Signature]</u> 11/07/15	<u>[Signature]</u> 11/2/16
		Re not correctly trained in how to run these tubes. LOA + new employee.		→ Re train Employee on correct sequence of turning BOD x-tubes. check to ensure folio is correct	<u>[Signature]</u>			<u>[Signature]</u> 11/2/16
				→ correcting folio as per July 6	<u>[Signature]</u>			

NOTE: Date &amp; initial all entries

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Run Start



QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130	QC1- Inspect dimensions to dimension sheet	0.00							
QC	Memo	0.00							
Quality Control									
140	QC8- Inspect parts - second check	0.00							
QC	Memo	0.00							
Quality Control									
150	Large Fab	0.00							
Crosstubes	Memo	0.00							
Crosstubes	Grind machining marks								

W/O:		WORK ORDER CHANGES					
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Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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**NOTE:** Date & initial all entries

## [REDACTED]

Friday, June 10, 2011 3:55:53 PM

**Accept**

\_\_\_\_\_

**Setup Start**

**00000000000000000000000000000000**

**Stop**

**00000000000000000000000000000000**

[illegible]**Cust Item ID:**

1. **Project Name:** [Redacted]  
 2. **Client:** [Redacted]  
 3. **Project Manager:** [Redacted]  
 4. **Project Start Date:** [Redacted]  
 5. **Project End Date:** [Redacted]  
 6. **Project Status:** [Redacted]  
 7. **Project Budget:** [Redacted]  
 8. **Project Location:** [Redacted]  
 9. **Project Description:** [Redacted]  
 10. **Project Objectives:** [Redacted]  
 11. **Project Risks:** [Redacted]  
 12. **Project Deliverables:** [Redacted]  
 13. **Project Milestones:** [Redacted]  
 14. **Project Stakeholders:** [Redacted]  
 15. **Project Communication Plan:** [Redacted]  
 16. **Project Change Management:** [Redacted]  
 17. **Project Quality Management:** [Redacted]  
 18. **Project Risk Management:** [Redacted]  
 19. **Project Resource Management:** [Redacted]  
 20. **Project Procurement Management:** [Redacted]

**Customer:**

**Reference:**

Run Start

**Abstract**

**Stop**

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

[REDACTED]

[illegible]

**Dart Aerospace Ltd**

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Required Date: 6/22/2011 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Run Start



QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
190		0.00							
	Packaging								
Packaging	Memo	0.00							
Packaging	Identify and stock in kanban rack Location: _____								
200		0.00							
	QC21- Final Inspection - Work Order Release								
QC	Memo	0.00							
Quality Control									

mf  
11-07-14

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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**NOTE:** Date & initial all entries



# Picklist Print

Page 1

Friday, June 10, 2011 3:56:00 PM

Work Order ID: 70646



Parent Item: D350-748-141TRN



Parent Item Name: Crosstube Turning Detail



Start Date: 6/10/2011

Required Date: 6/22/2011

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP Rev:A New Issue 08-03-06 DD verified by:ec  
IPP Rev B Removed polish 08.04.02 EC verified by : DD  
IPP Rev C Remove LPS-3 08.06.23 EC verified by DD IPP Rev C  
11.02.24 as per dwg rev.F DD verf: JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D6015-125  Crosstube Material		Manufactured	No			110	Each	53.0000	1 	1			
				<u>Location</u>			<u>Loc Qty</u>		<u>Loc Code</u>				
				HALL			53						
				61380			53						

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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**NOTE:** Date & initial all entries

<b>DART AEROSPACE LTD</b>		<b>Work Order:</b>	70440
<b>Description: Crosstube Assembly (AS350/355 High Fwd)</b>		<b>Part Number:</b>	D350-748-141
<b>Inspection Dwg: D350-748-141 Rev: E</b>		<b>Page 1 of 1</b>	

### FIRST ARTICLE INSPECTION CHECKLIST

Inspection Sheet Drawing Dimension		Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
SIDE A	2.240	+0.005/-0.000					
	2.180	+0.005/-0.000					
	2.180	+0.005/-0.000					
	2.237	+0.005/-0.000					
	2.272	+0.005/-0.000					
	2.306	+0.005/-0.000					
	2.339	+0.005/-0.000					
	2.339	+0.005/-0.000					
	0.062	+/-0.010	.062	✓			
	4.26	+/-0.030					
	R0.063	+/-0.010	.063	✓			
	R0.50	+/-0.030					
SIDE B	2.240	+0.005/-0.000					
	2.180	+0.005/-0.000					
	2.180	+0.005/-0.000					
	2.237	+0.005/-0.000					
	2.272	+0.005/-0.000					
	2.306	+0.005/-0.000					
	2.339	+0.005/-0.000					
	2.339	+0.005/-0.000					
	0.062	+/-0.010	.062	✓			
	4.26	+/-0.030					
	R0.063	+/-0.010	.063	✓			
	R0.50	+/-0.030					
	110.27	+/-0.060	110.260	✓		type	mm-L-02

<b>Measured by:</b>		<b>Audited by:</b>		<b>Preliminary Approval:</b>	
<b>Date:</b>		<b>Date:</b>		<b>Date:</b>	

Rev	Date	Change	Revised by	Approved
A	06.11.09	New Issue (P/O D350-748-101)	KJ/JLM	
B	07.10.24	Dwg Rev updated	KJ/EC/DD	
C	11.01.20	Dwg Rev updated	KJ	

W/O:		WORK ORDER CHANGES					
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NOTE: Date & initial all entries

Item	Qty	Part Number	Description
	-141		
1	X	D350-748-141	CROSSTUBE ASSEMBLY (AS 350/355 HI FWD)
2	1	D6015-125	CROSSTUBE (OR D6017-115)
3	2	D3502-1	SUPPORT
4	2	D2856-400-710	ABRASION STRIP
5	1	AELS-1032-225	INSERT
6	1	NAS1149D0363J	WASHER (OR AN960JD10)
7	2	MS21920-20	CLAMP (PER DART SPEC. M-MS21920-20)
8	1	MS27039-1-10	SCREW

#### GENERAL NOTES:

- 1) MATERIAL: MANUFACTURED FROM D6015-125 OR D6017-115  
FINISHED LENGTH = 110.270±0.06
- 2) FINISH: MAGNETIC PARTICLE INSPECT PER DART QSI 038 4.2  
CADMIUM PLATE PER AMS-QQ-P-416B, CLASS 1, TYPE II  
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2  
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: DART PART NUMBER "D350-748-141" AND BATCH NUMBER ON INSIDE OF CUFF  
PER DART QSI 044 6.4 (VIBRATING STYLUS)
- 7) WEIGHT: 30.45 lbs
- 8) PART IS SYMMETRIC ABOUT CENTERLINE, EXCEPT FOR Ø0.297 HOLE.
- 9) BLEND OUT ALL EDGES FROM MACHINING LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.  
NOTE: ALL HOLES ARE DRILLED AFTER BENDING.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 7 PASSES. MAXIMUM TUBE FLATTENING DUE TO  
BENDING IS 6% BASED ON O.D.
- 11) HEAT TREAT TO MIN. 180 KSI PER MIL-T-6736 OR AMS 2759-1C AFTER TURNING. ACCEPTABLE TO  
VERIFY TENSILE STRENGTH BY HARDNESS TEST PER ASTM E18 TO 40-45 HRC.
- 12) INSTALL D2856-400-710 ABRASION STRIPS WITH A GAP ON BOTTOM SIDE OF CROSSTUBE,  
CENTERED OPPOSITE D3502-1 SUPPORT, PER QSI 035.
- 13) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE  
OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES,  
NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY.  
CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE. WHEN DRILLING HOLES EXTREME CARE  
MUST BE TAKEN AND CAREFUL DEBURRING PERFORMED TO ENSURE A CLEAN HOLE WITH NO  
CRACKING/CHIPPING/GROOVES.
- 14) TORQUE CLAMPS 60 TO 80 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT  
NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.
- 15) MAX TWIST AFTER BENDING: WITH XTUBE LAYED FLAT ON SURFACE, THE DIFFERENCE BETWEEN  
CUFF HEIGHTS FROM THE SURFACE MAY BE NO LARGER THAN 0.25 (ZN C1-3).

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SUBJECT TO AMENDMENT  
WITHOUT NOTICE  
WORK ORDER  
NO. *7046*

RELEASED  
2011-01-18

F	ADD HRC TEST OPTION (B8-1) PER PAR 09-040, ADD TWIST LIMIT (A8-1, C1-3), ADD D6015-125 OPTION (C8-1), STOCK DIM NOW MACHINED (D1-4)	CP	10.11.23
E	REVISE GENERAL NOTES: UPDATE TO CURRENT ADD STANDARDS; RELOCATED FLAG #6 PER PAR 08-046 (ZN A6-3); TOLERANCES (ZN C6-3, D1-3)	RF	09.09.30
D	MAG. PARTICLE AND CAD PLATE AS MFD.	CP	06.10.31
C	ADD CAD PLATING	CP	06.08.14
B	ADD D6017-115 & PRIME AND PAINT	CP	06.06.30
A	NEW ISSUE	CP	06.03.31
REV.	DESCRIPTION	BY	DATE
DESIGN	<i>97</i>	<b>DART AEROSPACE LTD</b> HAWKESBURY, ONTARIO, CANADA	
DRAWN	<i>97</i>		
CHECKED	<i>h</i>	DRAWING NO.	REV. F
MFG. APPR.	<i>h</i>	D350-748-141	SHEET 1 OF 4
APPROVED	<i>h</i>	TITLE	SCALE
DE APPR.	<i>h</i>	CROSSTUBE (AS 350/355 HI FWD)	NTS
DATE	10.11.23	COPYRIGHT © 2006 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

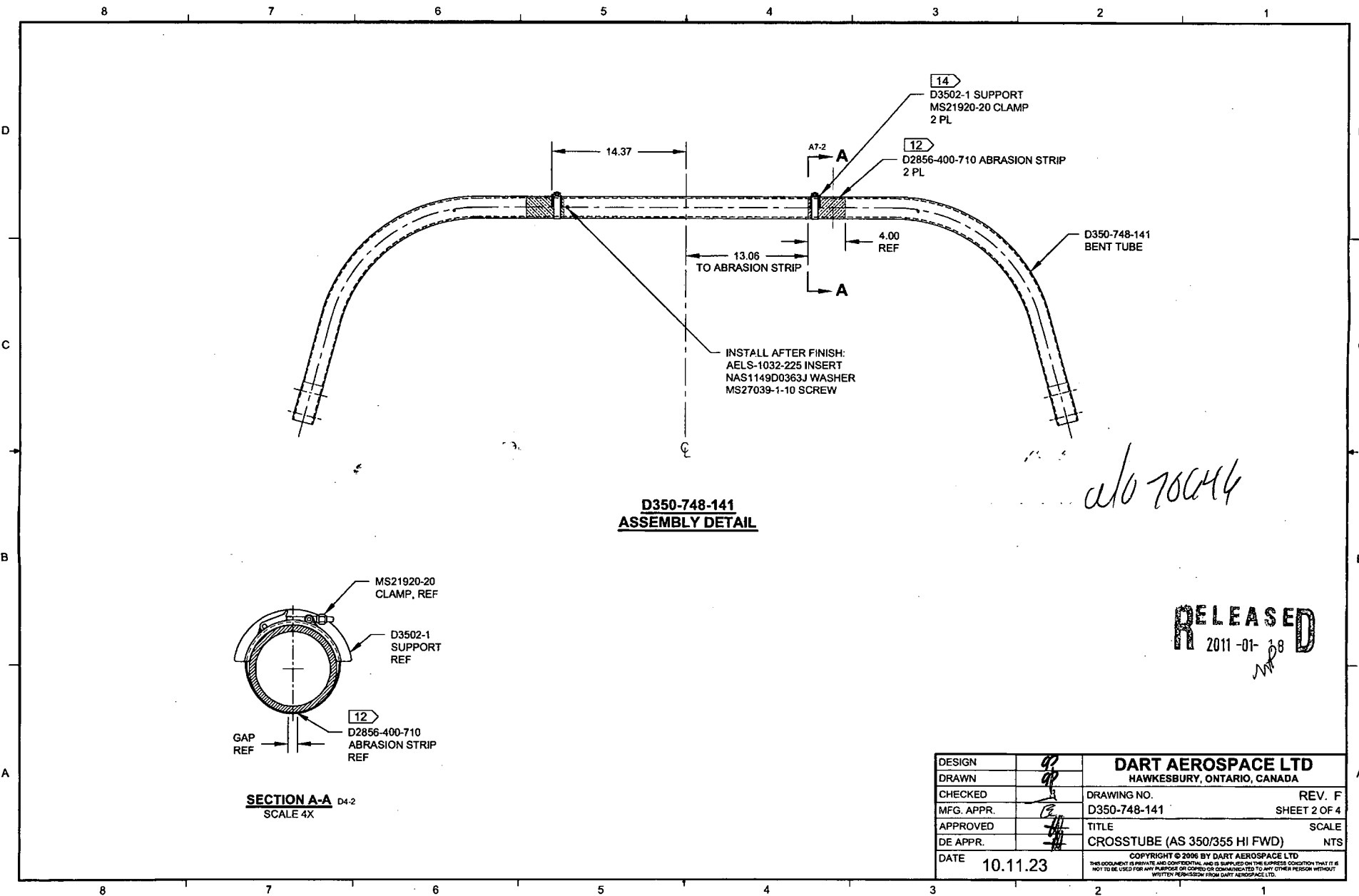
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DESIGN	99	<b>DART AEROSPACE LTD</b>	
DRAWN	99	HAWKESBURY, ONTARIO, CANADA	
CHECKED	12	DRAWING NO.	REV. F
MFG. APPR.	12	D350-748-141	SHEET 2 OF 4
APPROVED	12	TITLE	SCALE
DE APPR.	12	CROSSTUBE (AS 350/355 HI FWD)	NTS
DATE	10.11.23	<small>COPYRIGHT © 2006 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.</small>	

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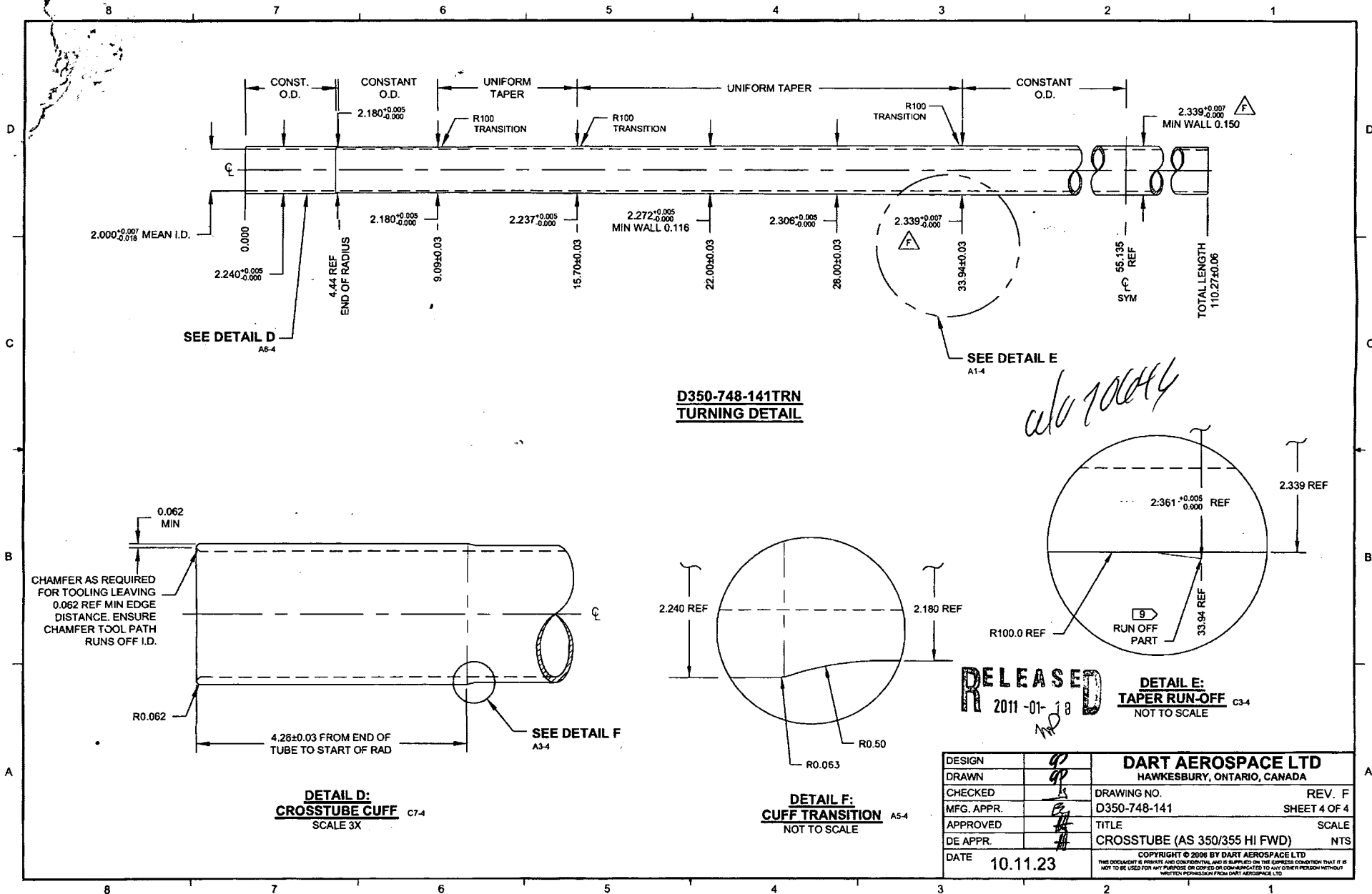
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